

What is claimed is:

1. A circuit emulation system comprising:
a sender-side transmitter, disposed at the
input side of an ATM network, for receiving a
5 synchronous-network-standards frame in conformity
with synchronous network standards, such as SDH,
which frame has three regions respectively assigned
to a section overhead, an administrative unit
pointer, and a payload; and
10 a receiver-side transmitter, disposed at the
output side of the ATM network, for outputting the
synchronous-network-standards frame;
said sender-side transmitter including
a section-overhead terminator for
15 terminating said section overhead of the
received synchronous-network-standards frame,
and
means for converting data in all of the
three regions of the received
20 synchronous-network-standards frame except
said section overhead, which regions include
said administrative unit pointer, into ATM
cells as object data for circuit emulation by
ATM and sending said ATM cells out to the ATM
25 network; and
said receiver-side transmitter including

an ATM-cell receiver for receiving said ATM cells from the ATM network and extracting said object data for circuit emulation from the received ATM cells, and

5 a synchronous-network-standards-frame regenerator for restoring the data in the remaining regions of the received synchronous-network-standards frame from said object data for circuit emulation, which object data has been extracted by said ATM-cell receiver, and regenerating an output synchronous-network-standards frame with a new section overhead added thereto.

2. A circuit emulation system according to claim 1, wherein:

said data converting means of said sender-side transmitter includes a particular-position-information adding section for adding, to said ATM cells, particular-position information indicating particular data in said object data for circuit emulation, which particular data is located at a particular position of the received synchronous-network-standards frame;

at said receiver-side transmitter

25 said ATM-cell receiver includes a particular-position-information extracting

section for extracting said particular-position information from the received ATM cells, and

said synchronous-network-standards-frame regenerator performs restoration of said particular data in said remaining regions and addition of said new section overhead in such a manner that said particular data, which is indicated by said particular-position information extracted by said particular-position-information extracting section, is located at the same position as said particular position in the received synchronous-network-standards frame.

3. A circuit emulation system according to claim 2, wherein:

said particular-position-information adding section of said data converting means serves as a boundary-indication-pointer adding section for adding said particular-position information to a boundary-indication-pointer field of structured data, which is defined as ATM cells of ATM adaptation layer type 1 ; and

said particular-position-information extracting section of said ATM-cell receiver serves as a boundary-indication-pointer extracting section for extracting said particular-position information from said boundary-indication-pointer

field.

4. A circuit emulation system according to claim 2 or 3, wherein said particular position represents a leading position of said payload of the received synchronous-network-standards frame.

5. A circuit emulation method comprising the steps of:

terminating a section overhead of a synchronous-network-standards frame in conformity with synchronous network standards, such as SDH, which frame has three regions respectively assigned to said section overhead, an administrative unit pointer, and a payload;

converting data in all of the three regions of the synchronous-network-standards frame except said section overhead, which regions include said administrative unit pointer, into ATM cells as object data for circuit emulation by ATM, and sending said ATM cells out to an ATM network;

receiving said ATM cells from the ATM network and extracting said object data for circuit emulation from the received ATM cells; and

restoring the data in the remaining regions of the synchronous-network-standards frame from said object data for circuit emulation, which object

data has been extracted in said ATM-cell receiving step, and regenerating an output synchronous-network-standards frame with a new section overhead added thereto.

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5 6. A sender-side transmitter for a circuit emulation system in which said sender-side transmitter is disposed at the input side of an ATM network for receiving a synchronous-network-standards frame in conformity with synchronous network standards, such as SDH, which frame has three regions respectively assigned to a section overhead, an administrative unit pointer, and a payload, said sender-side transmitter comprising:

10 a section-overhead terminator for terminating said section overhead of the received synchronous-network-standards frame; and

15 means for converting data in all of the three regions of synchronous-network-standards frame except said section overhead, which regions include said administrative unit pointer, into ATM cells as object data for circuit emulation by ATM and sending said ATM cells out to the ATM network.

20 7. A sender-side transmitter according to claim 6, wherein said data converting means includes

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a particular-position-information adding section
for adding, to said ATM cells, particular-position
information indicating particular data in said
object data for circuit emulation, which particular
5 data is located at a particular position of the
received synchronous-network-standards frame.

8. A sender-side transmitter according to
claim 7, wherein said
particular-position-information adding section
10 serves as a boundary-indication-pointer adding
section for adding said particular-position
information to a boundary-indication-pointer field
of structured data, which is defined as ATM cells
of ATM adaptation layer type 1.

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15 9. A sender-side transmitter according to
claim 7 or 8, wherein said particular position
represents a leading position of said payload of
the received synchronous-network-standards frame.

10. A receiver-side transmitter for a circuit
20 emulation system in which said receiver-side
transmitter is adapted to be disposed at the output
side of an ATM network for outputting a
synchronous-network-standards frame in conformity
with synchronous network standards, such as SDH,

which frame has three regions respectively assigned
to a section overhead, an administrative unit
pointer, and a payload, the system including at a
sender-side transmitter having means for converting
5 data in all of the three regions of the
synchronous-network-standards frame except the
section overhead, which regions include said
administrative unit pointer, into ATM cells as
object data for circuit emulation by ATM and sending
10 the ATM cells out to the ATM network, said
receiver-side transmitter comprising:

an ATM-cell receiver for receiving said ATM
cells from the ATM network and extracting said object
data for circuit emulation from the received ATM
15 cells; and

an synchronous-network-standards-frame
regenerator for restoring the data in the remaining
regions of the synchronous-network-standards frame
from said object data for circuit emulation, which
20 object data has been extracted by said ATM-cell
receiver, and regenerating the received
synchronous-network-standards frame with a new
section overhead added thereto.

11. A receiver-side transmitter for a circuit
25 emulation system according to claim 10, wherein:
if particular-position information indicating

particular data of said object data for circuit emulation, which particular data is located at a particular position in the synchronous-standards frame, is added to said ATM cells at the sender-side
5 transmitter;

said ATM-cell receiver includes a particular-position-information extracting section for extracting said particular-position information from the received ATM cells; and
10 said synchronous-network-standards-frame regenerator performs restoration of said particular data in the remaining regions of the synchronous-network-standards frame and addition of said new section overhead in such a manner that
15 said particular data, which is indicated by said particular-position information extracted by said particular-position-information extracting section, is located at the same position as said particular position in the
20 synchronous-network-standards frame.

12. A receiver-side transmitter for a circuit emulation system according to claim 11, wherein, if said particular-position information is added to a boundary-indication-pointer field of
25 structured data, which is defined as ATM cells of ATM adaptation layer type 1, said

particular-position-information extracting
section serves as a boundary-indication-pointer
extracting section for extracting said
particular-position information from said
5 boundary-indication-pointer field.

13. A receiver-side transmitter for a circuit
emulation system according claim 11 or 12, wherein
said particular position represents a leading
position of said payload of the received
10 synchronous-network-standards frame.

14. A circuit emulation system comprising:
a sender-side transmitter, disposed at the
input side of a non-SDH-transmission communication
network, for receiving a
15 synchronous-network-standards frame in conformity
with synchronous network standards, such as SDH,
which frame has three regions respectively assigned
to a section overhead, an administrative unit
pointer, and a payload; and

20 a receiver-side transmitter, disposed at the
output side of the non-SDH-transmission
communication network, for outputting the
synchronous-network-standards frame;

said sender-side transmitter including a frame
25 converter for converting data in all of the three

regions of the synchronous-network-standards frame
except said section overhead, which regions include
said administrative unit pointer, into a signal
format for the non-SDH-transmission communication
5 network as object data for circuit emulation by the
non-SDH-transmission communication network, and
sending the resulting signal-format data out to the
non-SDH-transmission communication network;

10 said receiver-side transmitter including a
synchronous-network-standards-frame regenerator
for receiving said object data for circuit emulation,
which object data has been received from the
non-SDH-transmission communication network in said
signal format, and regenerating an output
15 synchronous-network-standards frame with a new
section overhead added thereto.

15. A circuit emulation method comprising:
converting data in all of three regions of a
synchronous-network-standards frame in conformity
20 with synchronous network standards, such as SDH,
which frame has three regions respectively assigned
to a section overhead, an administrative unit
pointer, and a payload, except said section overhead,
which regions include said administrative unit
25 pointer, into data in a signal format for a
non-SDH-transmission communication network as

object data for circuit emulation by the
non-SDH-transmission communication network, and
sending the signal-format data out to the
non-SDH-transmission communication network; and
5 receiving said object data for circuit
emulation from the non-SDH/SONET-transmission
communication network, restoring the data in the
remaining regions of the
synchronous-network-standards frame from the
10 received object data for circuit emulation, and
regenerating an output
synchronous-network-standards frame with a new
section overhead added thereto.